

SOUTH DAKOTA STATEWIDE FISHERIES SURVEY

2102-F-21-R-48

Name: Mallard Dam **County(ies):** Corson
Legal Description: T22N-R21W-Sec. 2 **GPS:** 45°53'31.58"N 101°29'20.29"W
Location from nearest town: 2 miles south and 2 miles east of Watauga

Date of present survey: July 6-8, 2015 (netting); October 4, 2015 (electrofishing)
Date of last survey: June 25-27, 2012 (netting)
Most recent lake management plan: F-21-R-45 (January 1, 2013 to December 31, 2017)
Management classification: Warmwater Semi-permanent

Primary Game Species	Secondary and Other Species
Black Crappie	Black Bullhead
Largemouth Bass	Green Sunfish
Northern Pike	Channel Catfish
Yellow Perch	

PHYSICAL DATA

Surface Area: 40 acres **Watershed:** 6,400 acres
Maximum Depth: 16 feet **Mean Depth:** 7 feet
Lake elevation at time of survey (field observations): Full
Contour map: No **Date:** No

Ownership of lake and adjacent lakeshore properties:

Mallard Dam is a 40-acre impoundment located on Hump Creek, part of the Grand River drainage. The earthen dam creating the lake was constructed by the Federal Emergency Relief Administration in 1934. Mallard Dam lies within 160 acres of land owned by Corson County. To allow for the construction of the dam and the resultant flooding, as well as for public access to a strip of land 12-feet above the high water contour, two easement contracts to the State of South Dakota were signed. The South Dakota Department of Game, Fish and Parks applied for and received vested water rights to 180 acre/feet of water annually at Mallard Dam for public recreation. The Wildlife Division of the South Dakota Department of Game, Fish and Parks completes fisheries management activities at Mallard Dam.

Watershed condition with percentages of land use types:

Mallard Dam has a watershed of 6,480 acres or approximately 10.125 square miles, which is made up of South Dakota School and Public Lands property and privately owned agricultural land. Land use percentages in the watershed are approximately 50% native grassland utilized as pasture and hayland, 49% cultivated cropland, and 1% roads and residences. The immediate shoreline is 100% pastureland and cattle have direct access to the lake.

Fishing access:

Fishing access is somewhat limited during open water periods. There is no boat ramp for water access. A section line that crosses the spillway and an easement around the shoreline to a point 12 feet above the high water mark allows for shoreline fishing. Vegetation may hamper shore fishing at times of the year. There is good access for winter fishing.

Condition of all structures (i.e. spillway, boat ramps, level regulators, etc.):

The spillway was redone in 1998 and both the dam and spillway are in good condition. The bridge across the spillway is also in good condition. The access road is only a section line that may become impassible during wet times of the year.

Field observations of aquatic vegetation condition:

The emergent vegetation surrounds about 90% of the shoreline and is a mix of bulrushes and cattails. The only submergent vegetation observed was floating leaf pondweed in just a few areas around the shoreline although other species may be present.

CHEMICAL DATA**Field observations of water quality and pollution problems:**

No pollution problems were observed at the time of the survey. Water clarity was bad with a secchi disc reading of only 1 foot. The water usually has the look of chocolate milk, but this summer the clarity improved as the year progressed. Other water quality characteristics were measured in the field on July 6, 2015, using a HACH water quality kit and a Hanna multiparameter meter. Results are found in Table 1.

Presence of a thermocline and depth from surface: No

Station for water chemistry located on attached map: Yes

Table 1. Water chemistry results from Mallard Dam, Corson County, July 6, 2015.

Station	Depth (ft)	Temp (F)	DO (ppm)	CO2 (ppm)	ALK (mg/L)	HRD (mg/L)	pH	Cond. (μS/cm)	TDS (ppm)	Sal.	ORP	Secchi (ft)
A	Surface	72.7	6.3	27.4	103	147	7.69	443	221	击관	24.0	1.0
A	16.4	71.9	3.0	28.4	108	139	7.39	439	219	0.21	40.6	

BIOLOGICAL DATA

Methods:

Mallard Dam was sampled on July 6-8, 2015, with ten overnight trap net sets. The trap nets have 3ft x 5ft frames, 60ft leads, and ¾ inch knotted mesh. No experimental gill nets were set on Mallard Dam in 2015. On the evening of October 4, 2015, Mallard Dam was electrofished for 30 minutes (3-ten minute transects) to sample the largemouth bass population. The boat was set up with 120 pulses per second of DC current at 340 volts with around 15 amps to electrofish the lake that had a conductivity of 544µS/cm with a water temperature of 51.9°F. Fish indices and statistics were completed using Winfin.

Results and Discussion:

Trap Net Catch

Table 2. Total catch of ten, overnight ¾-inch frame nets at Mallard Dam, Corson County, July 6-8, 2015.

Species	#	%	CPUE	80% C.I.	Mean CPUE*	PSD	RSD-P	Mean Wr
Black Crappie	1,106	96.3	110.6	± 27.9	31.7	38	10	102
Black Bullhead	21	1.8	2.1	± 0.8	10.4	81	6	89
Yellow Perch	11	1.0	1.1	± 0.9	1.4	9	0	102
Pumpkinseed Sunfish	8	0.7	0.8	± 0.5	0.8	25	0	110
Channel Catfish	2	0.2	0.2	± 0.2	0.2	--	--	84

* Twelve year mean (1968, 1971, 1979, 1982, 1987, 1991, 1995, 2000, 2003, 2006, 2009, 2012)

Table 3. Total catch from three, ten-minute runs of fall nighttime electrofishing at Mallard Dam, Corson County, October 4, 2015.

Species	#	%	CPUE	80% C.I.	Mean CPUE*	PSD	RSD-P	Mean Wr
Largemouth Bass	45	100	90.0	± 17.3	0.0	13	8	113

* First recorded electrofishing sample in 2015

Black Crappie

The black crappie population in Mallard Dam continues to improve. The CPUE of 110.6 is well above the 15.4 from the 2012 survey (Table 6) as well as the 31.7 twelve year mean (Table 2). Figures 1 through 5 illustrate the length frequency histograms for the fish sampled over the past five surveys. The last two surveys show this improvement in the population's size structure with a good number of fish starting to get where anglers would target them. This improved population is having a positive effect on the other populations as well in that the bullhead numbers are down and by the end of the summer the water clarity was greatly improved. Growth is still slow compared to statewide, regional and SLI means (Table 4). Condition is good with a mean Wr of 102.

Table 4. Average back-calculated lengths (mm) for each age class of black crappie sampled from Mallard Dam, Corson County, 2015.

Year Class	Age	N	Back-calculated Age							
			1	2	3	4	5	6	7	8
2014	1	3	68							
2013	2	63	61	116						
2012	3	2	59	121	175					
2011	4	3	68	125	170	214				
2010	5	9	68	116	155	200	222			
2009	6	4	77	118	159	182	203	236		
2008	7	13	66	114	156	176	199	226	245	
2007	8	5	66	107	152	177	192	206	233	248
All Classes		102	67	117	161	190	204	223	239	248
Statewide Mean			83	147	195	229	249			
Region II Mean			75	132	177	209	235			
SLI* Mean			78	134	180	209	226			

* Small Lakes and Impoundments

Figure 1. Length frequency histogram for black crappie sampled from Mallard Dam, Corson County, 2015.

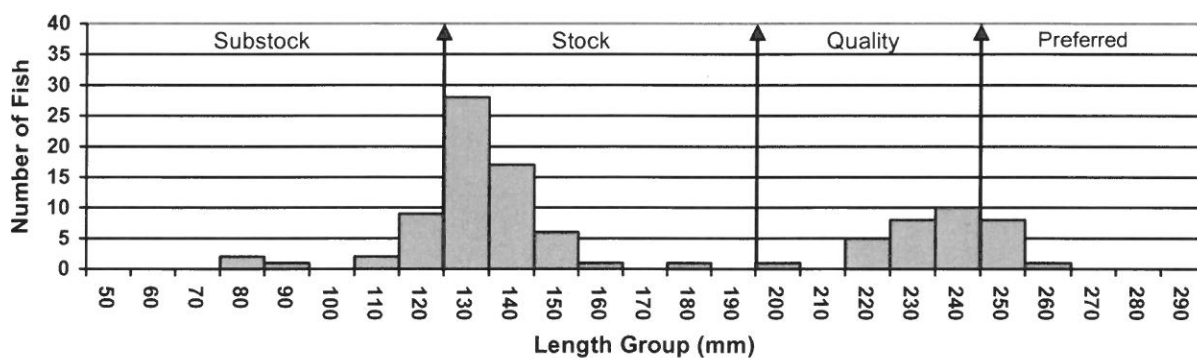


Figure 2. Length frequency histogram for black crappie sampled from Mallard Dam, Corson County, 2012.

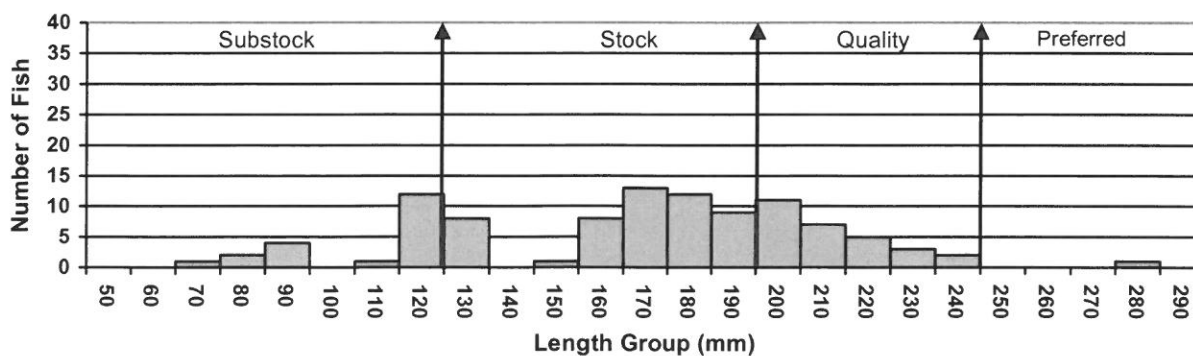


Figure 3. Length frequency histogram for black crappie sampled from Mallard Dam, Corson County, 2009.

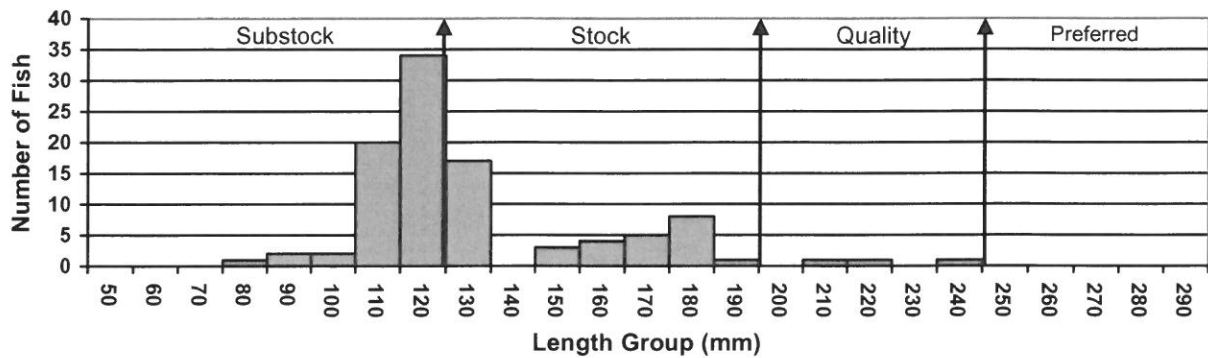


Figure 4. Length frequency histogram for black crappie sampled from Mallard Dam, Corson County, 2006.

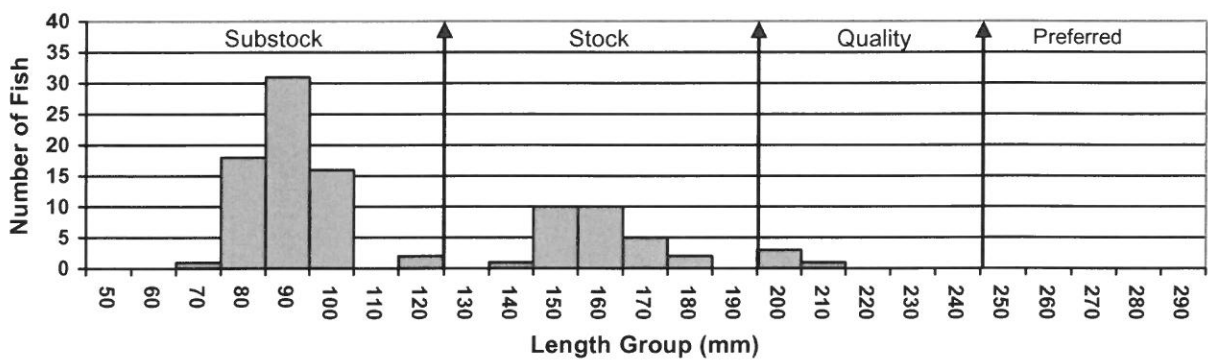
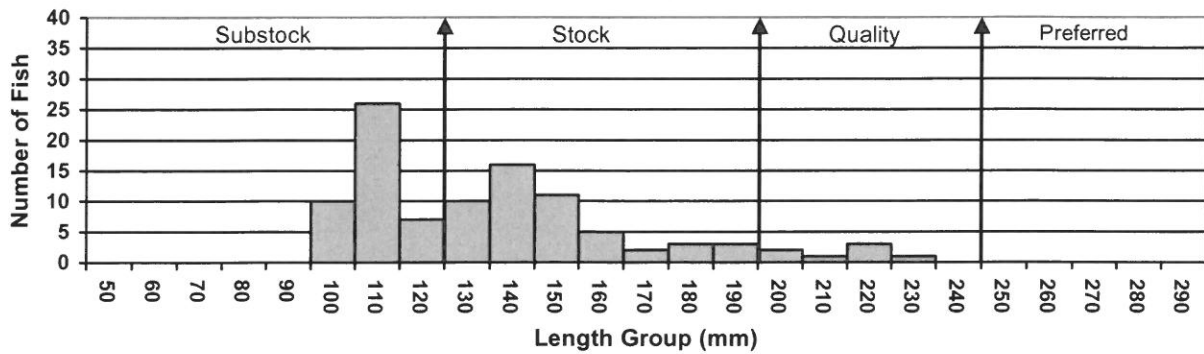


Figure 5. Length frequency histogram for black crappie sampled from Mallard Dam, Corson County, 2003.



Largemouth Bass

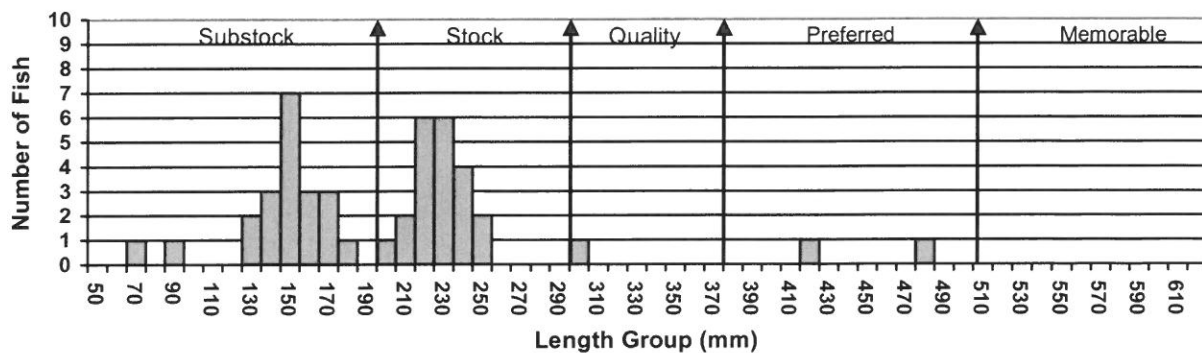
The largemouth bass population in Mallard Dam was electrofished this survey for the first time on record and produced the biggest surprise of the survey. The CPUE was 90.0 fish per hour. Size structure is made up of mostly small fish as can be seen in Figure 6, but this is a start in the right direction. Growth is very good with means at or slightly above statewide, regional and SLI means (Table 5). Condition is also good with a mean Wr of 113. This increase in numbers, if they hold, will also help keep the bullhead numbers in check, which will greatly benefit the lake.

Table 5. Average back-calculated lengths (mm) for each age class of largemouth bass sampled from Mallard Dam, Corson County, 2015.

Year Class	Age	N	Back-calculated Age							
			1	2	3	4	5	6	7	8
2015	0	1								
2014	1	19	82							
2013	2	22	77	164						
2009	6	1	95	201	307	340	376	408		
2007	8	1	64	187	266	353	386	420	438	464
All Classes		44	79	184	287	346	381	414	438	464
Statewide Mean			96	182	250	305	342			
Region II Mean			105	183	246	296	328			
SLI* Mean			99	183	246	299	332			

* Small Lakes and Impoundments

Figure 6. Length frequency histogram for largemouth bass sampled from Mallard Dam, Corson County, 2015.



Other Species

The black bullhead population has seen a decrease in the population. The CPUE of 2.1 is below the 26.1 from the 2012 survey (Table 6) as well as the 10.4 twelve year mean (Table 2). Figures 7 through 9 illustrate the length frequency histograms for the fish sampled the past three surveys. They show this reduced numbers and a slight increase in the size structure. Condition is fine with a mean W_r of 89.

Yellow perch, channel catfish and pumpkinseed sunfish were the other species sampled this survey. None were sampled in large enough numbers to make any inferences about their populations. Northern pike, bluegill, green sunfish, orangespotted sunfish and golden shiner were the species not sampled that have been in surveys past (Table 6).

Figure 7. Length frequency histogram for black bullhead sampled from Mallard Dam, Corson County, 2015.

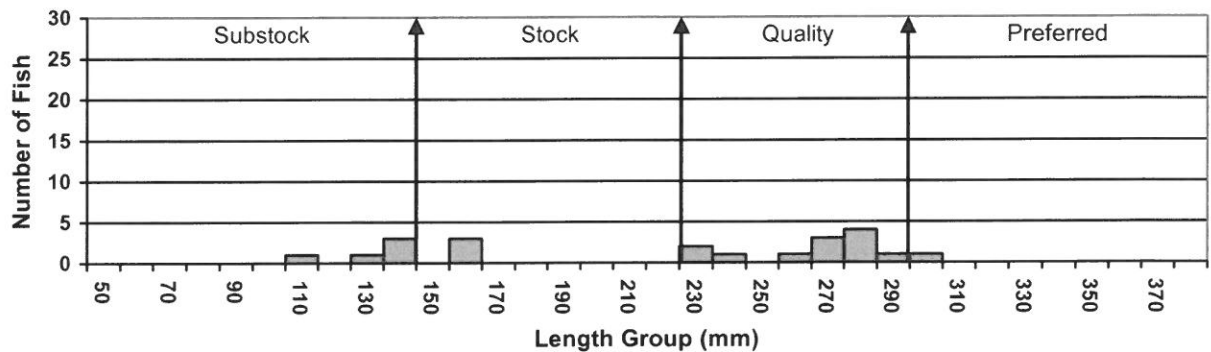


Figure 8. Length frequency histogram for black bullhead sampled from Mallard Dam, Corson County, 2012.

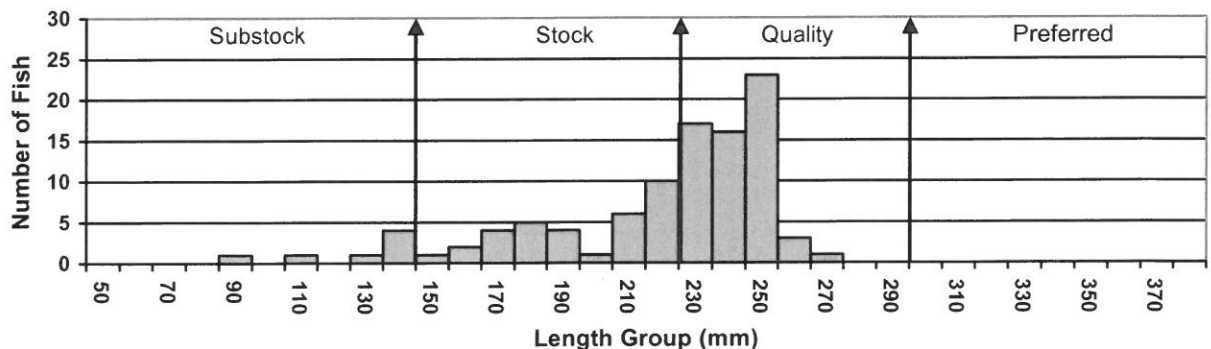
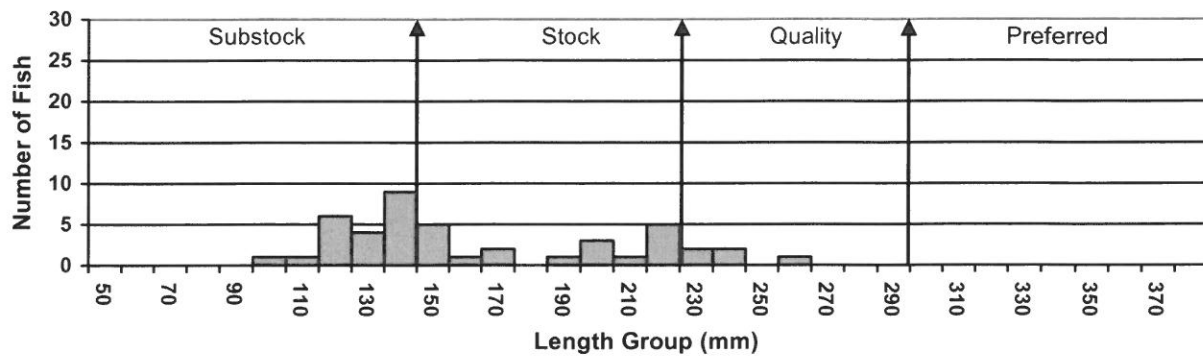


Figure 9. Length frequency histogram for black bullhead sampled from Mallard Dam, Corson County, 2009.



Stocking Records: No stockings have been done on Mallard Dam in the last ten years.

RECOMMENDATIONS

1. Resurvey in 2018 to monitor the fish populations in the lake.

Table 6. Gill net (GN) and trap net (TN) CPUE for all fish species sampled in Mallard Dam through the history of lake surveys.

Species	1968	1971	1979	1982	1987	1991	1995	2000	2003	2006	2009	2012	2015
BLB (GN)	--	5.0	--	2.0	--	--	--	--	--	--	--	--	--
BLB (TN)	3.0	8.0	9.9	4.0	34.1	15.3	3.5	9.0	1.2	6.6	4.4	26.1	2.1
BLC (GN)	--	4.0	--	--	--	--	--	--	--	--	--	--	--
BLC (TN)	16.0	60.0	22.9	12.5	53.9	54.4	4.6	39.1	12.5	48.0	41.4	15.4	110.6
YEP (GN)	--	10.0	--	6.0	--	--	--	--	--	--	--	--	--
YEP (TN)	--	11.0	0.6	2.5	1.0	0.1	0.1	0.1	--	0.5	0.2	0.2	1.1
LMB (EF)	--	--	--	--	--	--	--	--	--	--	--	--	90.0
LMB (GN)	--	1.0	--	--	--	--	--	--	--	--	--	--	--
LMB (TN)	1.2	0.3	0.1	0.5	0.1	0.3	--	0.3	0.5	0.2	0.1	--	--
NOP (GN)	--	1.0	--	3.0	--	--	--	--	--	--	--	--	--
NOP (TN)	0.3	0.3	0.3	--	0.9	1.1	0.4	0.6	1.2	1.2	1.3	1.1	--
CCF (GN)	--	--	--	--	--	--	--	--	--	--	--	--	--
CCF (TN)	--	--	--	--	--	--	0.1	--	1.0	0.3	1.2	0.1	0.2
BLG (GN)	--	--	--	--	--	--	--	--	--	--	--	--	--
BLG (TN)	--	--	--	--	--	--	0.3	--	--	--	--	--	--
GSF (GN)	--	--	--	--	--	--	--	--	--	--	--	--	--
GSF (TN)	0.3	--	1.5	--	0.1	2.0	--	0.3	--	0.1	--	--	--
OSF (GN)	--	--	--	--	--	--	--	--	--	--	--	--	--
OSF (TN)	--	--	--	--	--	--	--	--	--	--	--	0.4	--
PUS (GN)	--	--	--	--	--	--	--	--	--	--	--	--	--
PUS (TN)	--	4.0	--	2.4	2.5	--	--	0.3	--	--	--	--	0.8
GOS (GN)	--	--	--	--	--	--	--	--	--	--	--	--	--
GOS (TN)	--	--	--	1.1	0.3	0.1	--	0.1	--	--	--	0.1	--

BLB-Black Bullhead, BLC-Black Crappie, YEP-Yellow Perch, LMB-Largemouth Bass, NOP-Northern Pike, CCF-Channel Catfish, BLG-Bluegill, GSF-Green Sunfish, OSF-Orangespotted Sunfish, PUS-Pumpkinseed Sunfish, GOS-Golden Shiner